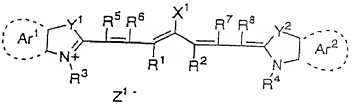
WHAT IS CLAIMED IS:

1. A negative image-recording material for heat-mode exposure, the material comprising: (A) an IR absorber; (B) a radical generator having an onium salt structure; (C) a radical-polymerizing compound; and (D) a reducing additive, the material being recordable by exposure with IR radiation.

2. A negative image-recording material for heat-mode exposure, the material comprising: (A) an IR absorber; (B) a radical generator having an onium salt structure; (C) a radical-polymerizing compound; and (D) a reducing additive, the material being recordable by exposure with IR radiation, and the IR absorber being one of an IR-absorbing dye and an IR-absorbing pigment, for converting absorbed light into heat, and having an absorption peak at a wavelength from 760 to 1200 nm.

3. The negative image-recording material as claimed in claim 1, wherein the IR absorber are cyanine dyes of the following general formula (I):

General formula (I)



In general formula (I), X^1 represents a halogen atom, X^2-L^1 or X^2-$(L^1)_2$;

X^2 represents an oxygen, sulfur or nitrogen atom; L^1 represents a hydrocarbon group having from 1 to 12 carbon atoms, or a heterocyclic group; and R^1 and R^2 each independently represents a hydrocarbon group having from 1 to 12 carbon atoms; and Ar^1 and Ar^2 may be the same or different, and each represents an optionally-substituted aromatic hydrocarbon group; and Y^1 and Y^2 may be the same or different, and each represents a sulfur atom or a dialkylmethylene group having at most 12 carbon atoms; and R^3 and R^4 may be the same or different, and each represents an optionally-substituted hydrocarbon group having at most 20 carbon atoms; and R^5, R^6, R^7 and R^8 may be the same or different, and each represents a hydrogen atom, or a hydrocarbon group having at most 12 carbon atoms; and Z^{1-} represents a counter ion required for charge neutralization.

4. The negative image-recording material as claimed in claim 3, wherein R^1 and R^2 are bonded to each other to form a 5-membered or 6-membered ring.

5. The negative image-recording material as claimed in claim 1, wherein the IR absorber is contained in the material in an amount of from 0.1 to 20 % by weight of total solid content of the material.

6. The negative image-recording material as claimed in claim 1, wherein the radical generator having an onium salt structure is an onium salt selected from the group consisting of iodonium salts, diazonium salts

and sulfonium salts.

7. The negative image-recording material as claimed in claim 2, wherein the radical generator having an onium salt structure is an onium salt selected from the group consisting of iodonium salts, diazonium salts and sulfonium salts.

8. The negative image-recording material as claimed in claim 1, wherein the radical generator having an onium salt structure comprises an onium salt represented by the following general formula (III):

Ar^{11}-I^{+}-Ar^{12} Z^{11-} General formula (III)

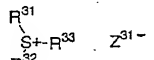
in which: Ar^{11} and Ar^{12} each independently represents an optionally substituted aryl group having at most 20 carbon atoms; and Z^{11-} represents a counter ion selected from the group consisting of halide ions, perchlorate ions, tetrafluoroborate ions, hexafluorophosphate ions, carboxylate ions and sulfonate ions.

9. The negative image-recording material as claimed in claim 1, wherein the radical generator having an onium salt structure comprises an onium salt represented by the following general formula (IV):

Ar^{21}-$N^{+}\equiv N$ Z^{21-} General formula (IV)

in which: Ar^{21} represents an optionally substituted aryl group having at most 20 carbon atoms; and Z^{21-} represents a counter ion selected from the group consisting of halide ions, perchlorate ions, tetrafluoroborate ions, hexafluorophosphate ions, carboxylate ions and sulfonate ions.

10. The negative image-recording material as claimed in claim 1, wherein the radical generator having an onium salt structure comprises an onium salt represented by the following general formula (V):



General formula (V)

in which: each of R^{31}, R^{32} and R^{33} may be the same as and may be different from another of R^{31}, R^{32} and R^{33}, and represents an optionally substituted hydrocarbon group having at most 20 carbon atoms; and Z^{31-} represents a counter ion selected from the group consisting of halide ions, perchlorate ions, tetrafluoroborate ions, hexafluorophosphate ions, carboxylate ions and sulfonate ions.

11. The negative image-recording material as claimed in claim 1, wherein the radical generator having an onium salt structure is

contained in the material in an amount of from 0.1 to 50 % by weight of total solid content of the material.

12. The negative image-recording material as claimed in claim 1, wherein the radical-polymerizing compound has at least one terminal ethylenically unsaturated double bond.

13. The negative image-recording material as claimed in claim 2, wherein the radical-polymerizing compound has at least one terminal ethylenically unsaturated double bond.

14. The negative image-recording material as claimed in claim 1, wherein the reducing additive has a reaction rate constant with respect to radicals of at least $1 \times 10^5\ M^{-1}sec^{-1}$; the reaction rate constant with respect to onium salts of the electron donor formed through radical reaction is at least $1 \times 10^6\ M^{-1}sec^{-1}$; the oxidation potential of the electron donor is -0.3 V (vs. SCE) or less.

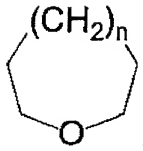
15. The negative image-recording material as claimed in claim 14, wherein the reducing additive is selected from the group consisting of ether-type hydrogen donors, alcohol-type hydrogen donors, vinyl ethers, and phosphine compounds.

16. The negative image-recording material as claimed in claim 2, wherein the reducing additive has a reaction rate constant with respect to

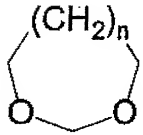
radicals of at least 1×10^5 $M^{-1}sec^{-1}$; the reaction rate constant with respect to onium salts of the electron donor formed through radical reaction is at least 1×10^6 $M^{-1}sec^{-1}$; the oxidation potential of the electron donor is -0.3 V (vs. SCE) or less.

17. The negative image-recording material as claimed in claim 16, wherein the reducing additive is selected from the group consisting of ether-type hydrogen donors, alcohol-type hydrogen donors, vinyl ethers, and phosphine compounds.

18. The negative image-recording material as claimed in claim 15, wherein the ether-type hydrogen donors are selected from the group consisting of cyclic ether compounds represented by one of the following general formulae (i) and (ii) and polyethers represented by the following general formula (iii):



(i)

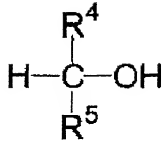


(ii)

(iii)

in which: n indicates 0, 1 or 2; m indicates an integer of at least 2; R^1 represents a divalent alkylene group; and R^2 and R^3 each represents a monovalent organic group.

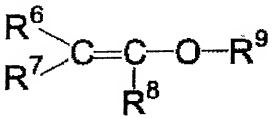
19. The negative image-recording material as claimed in claim 15 , wherein the alcohol-type hydrogen donors comprise secondary alcohol compounds represented by the following general formula (iv):



(iv)

in which R^4 and R^5 each represents a monovalent or divalent organic group.

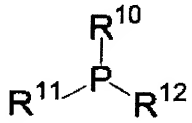
20. The negative image-recording material as claimed in claim 15, wherein the vinyl ethers comprise compounds represented by the following general formula (v):



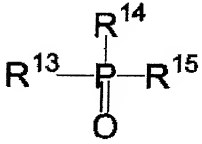
(v)

in which R^6 to R^9 each independently represents a monovalent or divalent organic group.

21. The negative image-recording material as claimed in claim 17 , wherein the phosphine-type compounds comprise compounds represented by one of the following general formulae (vi) and (vii):



(vi)



(vii)

in which R^{10} to R^{15} each independently represents a monovalent or divalent organic group.

22. The negative image-recording material as claimed in claim 1, wherein the reducing additive is contained in the material in an amount of from 0.1 to 70 % by weight of total solid content of the material.